

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

Claims 1-4, 6-18, 36, 44, 62, 67, 73-74, 77-78, 89-90 and 93-94 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,309,981 to Mayer et al. and U.S. 6,161,054 to Rosenthal. Claims 19-26, 45, 75-76 and 91-92 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,309,981 to Mayer et al. U.S. 5,083,364 to Olbrich et al. and U.S. 6,161,054 to Rosenthal. Claims 27 and 31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,231,428 to Maloney et al. Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dordi et al. (1) and Maloney et al. as applied to claims 27 and 31 and further in view of U.S. 5,083,364 to Olbrich et al. Claim 29 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dordi et al. (1) and Maloney et al. as applied to claims 27 and 31 above, in view of U.S. 5,310,410 to Begin et al. and U.S. 5,083,364 to Olbrich et al. Claim 30 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dordi et al. (1), Maloney et al., Begin et al. and Olbrich et al. as applied to claim 29 above, and further in view of U.S. 6,084,419 to Sato et al. Claims 32-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dordi et al. (1) and Maloney et al. as applied to claims 27 and 31 above, in view of U.S. 2002/0157960 A1 to Dordi et al. (2). Claims 37-43 and 79-88 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,309,981, to Mayer et al. and U.S. 2002/0157960 A1 to Dordi et al. (2) and U.S. 6,161,054 to Rosenthal. Claims 63 and 71 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,161,054 to Rosenthal. Claims 64 and 65 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 6,267,853 to Dordi et al. (1) in view of U.S. 6,161,054 to Rosenthal and U.S. 6,368,183 to Trojan et al. Claims 69, 70 and 72 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dordi et al. (1) and Maloney et al. as applied to claims 27 and 31 above, in view of U.S. 2002/0157960 A1 to Dordi et al. (2).

By the current Amendment, all claims except for claims 27-35, 63, 69, 70 and 72 have been cancelled, and claims 95-107 have been added. The rejections of claims 27-35, 63, 69, 70 and 72 are respectfully traversed for the following reasons.

With regard to claims 27 and 63, the Examiner relies on Dordi et al. (1), U.S. Patent No. 6,231,428, as a primary reference to reject these claims. Specifically, the Examiner takes the position that the bevel etching unit as recited in these claims is disclosed by Dordi et al. (1) as one of modules 236. However, it is respectfully submitted that Dordi et al. (1) does not disclose or suggest the bevel etching unit as recited in claims 27 and 63.

In this regard, Dordi et al. (1) does not teach or suggest a bevel etching unit *operable to supply an acid solution to a center portion of a semiconductor substrate*. That is, though a nozzle 2172 is provided above a central portion of a wafer, as shown in FIG. 14, this nozzle is for delivering de-ionized water to the central portion of the wafer during an edge bead removal process to prevent unintended etching by etchant that has splashed onto a central portion of the wafer. Please see column 11, lines 21 to 27. Thus, this nozzle is not operable to supply an acid solution to a center portion of the semiconductor substrate.

The bevel etching unit as recited in claims 27 and 63 is, on the other hand, operable to supply an acid solution to a center portion of a semiconductor substrate and to supply an oxidizing agent solution to a peripheral edge portion of the semiconductor substrate, while the substrate is rotating. With such a unit, a copper film, for example, formed on the peripheral edge portion of the semiconductor substrate is rapidly oxidized with the oxidizing agent solution, and is simultaneously etched with the acid solution which spreads over an entire face of the substrate, whereby the film is dissolved and removed. As described in the specification, by mixing the acid solution and the oxidizing agent solution at the peripheral edge portion of the substrate, a steep etching profile can be obtained, as compared with a mixture of these solutions produced in advance being supplied to the substrate.

None of the other references resolve this deficiency of Dordi et al. (1), whereby claims 27 and 63 are allowable over the relied-upon references either taken alone or in combination. Thus, claims 27-35, 63 and 95-104 are allowable.

Additionally, claim 32 is believed to be patentable in its own right. In this regard, in rejecting claim 32, the Examiner took the position that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. However, the "plating

liquid impregnated material” is a structural element of the plated metal film forming unit, which is a component of the semiconductor substrate processing apparatus. See reference numeral “2-22” shown in FIGS. 10 and 11, for example. Claim 32 has been amended to make this more clear. Because the relied-upon references do not teach or suggest the plating liquid impregnated material as recited in claim 32, this claim is patentable in its own right.

In supporting the rejection of claims 69, 70 and 72, the Examiner takes the position that Dordi et al. (2) teaches a plated metal film forming unit capable of raising and lowering a semiconductor substrate so as to correspond to respective operating conditions, and directs Applicants’ attention to paragraph [0075] of this reference. It is respectfully submitted that Dordi et al. (2) fails to teach a substrate holding portion as recited in claims 69, 70 and 72.

In this regard, claims 69, 70 and 72 recite that the substrate holding portion is adapted to be raised and lowered between three distinct positions; namely, a lower position, upper position and middle position. And, these claims also recite that *cleaning water is supplied to the semiconductor substrate at the middle position*. This feature is not disclosed in Dordi et al. (2) nor any of the other references. Thus, claims 69, 70, 72 and 105-107 are allowable over the relied-upon references either taken alone or in combination.

In view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance, with the allowed claims being 27-35, 63, 69, 70, 72 and 95-107, and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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